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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,582	09/15/2003	Jack L. Jewell	PICO-0047-1	8055

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EXAMINER

VAN ROY, TOD THOMAS

ART UNIT PAPER NUMBER

2828

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/661,582

Applicant(s)

JEWELL, JACK L.

Examiner

Tod T. Van Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 57-65 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 57-65 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08/07/2002.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 57-58, 61, and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell et al. (US 5245622) in view of Choquette et al. (US 5493577).

With respect to claims 57-58, Jewell teaches a light emitting device comprising: a first mirror (fig.3 #20), a light emitting active layer disposed above said first mirror (fig.3 #40), a first oxidizable layer (fig.3 #63, col.7 line 1, AlGaAs) being disposed above said light emitting active layer, a semiconductor layer residing above a portion of the oxidizable layer (fig.3 #64), top and bottom contacts (fig.3 #80-top, #90-bottom) disposed to communicate with said light emitting active layer, interconnect metallization deposited above a portion of the semiconductor layer in contact with said top electrical contact (fig.3 #80, col.6 lines 30-32, speaking of the usage of metallic deposition), and

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additionally teaches the use of a current aperture (fig.3 #47), made by implanting protons most, but not all, of the way across layer #63 (fig.3 #48). Jewell does not teach the oxidizable layer to be oxidized. Choquette teaches a light-emitting device, which contains an oxidized current control layer, formed of AlGaAs (col.9 lines 11-12, col.9 lines 22-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the implanted proton layer #48 of Jewell with the oxidized AlGaAs layer of Choquette to provide current confinement and direction, through the remaining aperture in the oxide, into the active region, resulting in increased light generation efficiency (Choquette, col.10 lines 15-25).

With respect to claim 61, Jewell and Choquette teach the light emitting device as outlined in the rejection to claim 57 above, and further teach the top contact to be characterized by a center (Jewell, fig.3- contact #80 fabricated with open center region to allow for placement of mirror #70, and emission of light).

With respect to claims 64-65, Jewell and Choquette teach the light emitting device as outlined in the rejection to claim 57 above, and further teach the semiconductor layer, #64, to have an electrically insulating region formed by ion implantation (Jewell, fig.3 #35) which is above at least a part of the oxidized region.

Claims 59-60, and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jewell in view of Choquette and further in view of Evans et al. (Evans et al., "Edge-Emitting Quantum Well Heterostructure Laser Diodes with Auxiliary Native-

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oxide Vertical Confinement," Applied Physics Letters, vol. 67, pp. 3 168-3 170 (Nov.1995)).

With respect to claims 59-60, Jewell and Choquette teach the light emitting device as outlined in the rejection to claim 57 above, but do not teach the use of a basin disposed proximal to the oxidized region, for allowing the region to be oxidized. Evans teaches a light-emitting device, which uses a basin region proximal to an oxidized region, wherein, the basin is used to oxidize the region (fig.1, trench near top and bottom oxidized regions, col.3 lines 20-30, speaking of forming the oxide following trench formation). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the light emitting device of Jewell and Choquette with the trench oxidation method of Evans to allow for fabrication flexibility, oxidation of selected layers for current/index guiding, and the realization of a passivated crystal surface which increases device reliability (Evans, col.6 lines 15-21).

With respect to claims 62-63, Jewell and Choquette teach the light emitting device as outlined in the rejection to claim 61 above, but do not teach the use of a basin disposed proximal to the oxidized region, not hemming said center, for allowing the region to be oxidized. Evans teaches a light-emitting device, which uses a basin region proximal to an oxidized region and not hemming the center (fig.1, col.3 lines 34-42, trench away from center allowing for light confinement with top reflector), wherein, the basin is used to oxidize the region (fig.1, trench near top and bottom oxidized regions, col.3 lines 20-30, speaking of forming the oxide following trench formation). It would have been obvious to one of ordinary skill in the art at the time of the invention to

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combine the light emitting device of Jewell and Choquette with the trench oxidation method, and location, of Evans to allow for fabrication flexibility, oxidation of selected layers for current/index guiding, light confinement, and the realization of a passivated crystal surface which increases device reliability (Evans, col.6 lines 15-21).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 57-63 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 5, and 8 of U.S. Patent No. 6014395. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

With respect to claim 57, Jewell 395' discloses a light emitting device comprising: a first mirror (claim 5), a light emitting active layer disposed above said first mirror (claims 3,5), a first oxidizable layer having a region which is oxidized and disposed above the active layer (claims 1,3), at least one semiconductor layer above the oxide

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layer (claim 1), a second mirror above the active region (claim 5), top and bottom electrical contacts disposed to communicate with the active layer (claim 1), and interconnect metallization deposited above the semiconductor layer and in contact with the top electrical contact (claim 1).

With respect to claim 58, Jewell 395' discloses a second region that is not oxidized (claim 1).

With respect to claims 59-60 and 62-63, Jewell 395' discloses a basin next to the oxide region (claim 1) for oxidizing the region, not hemming said center (claim 8, second region aligned with center of contact so the basin would not hem the center).

With respect to claim 61, Jewell 395' discloses a top contact (claim 1) wherein the top contact is characterized by a center (inherent that a contact would have a characteristic center point).

Claims 64-65 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, and 5 of U.S. Patent No. 6014395 in view of Jewell 622'.

With respect to claims 64-65, Jewell 395' teaches the light emitting device of claim 57, but does not teach the semiconductor region to have an insulating region formed by ion implantation above the oxide region. Jewell 395' teaches a light emitting device which uses a insulating region formed by ion implantation above the oxide region as outlined in the rejection to claims 64 and 65 above.

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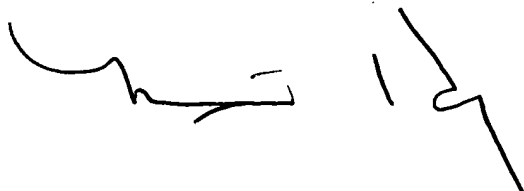
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR



MINSUN OH HARVEY
PRIMARY EXAMINER